POCKET COMPUTER NEWSLETTER

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HEWLETT-PACKARD INTRODUCES PORTABLE COMPUTER

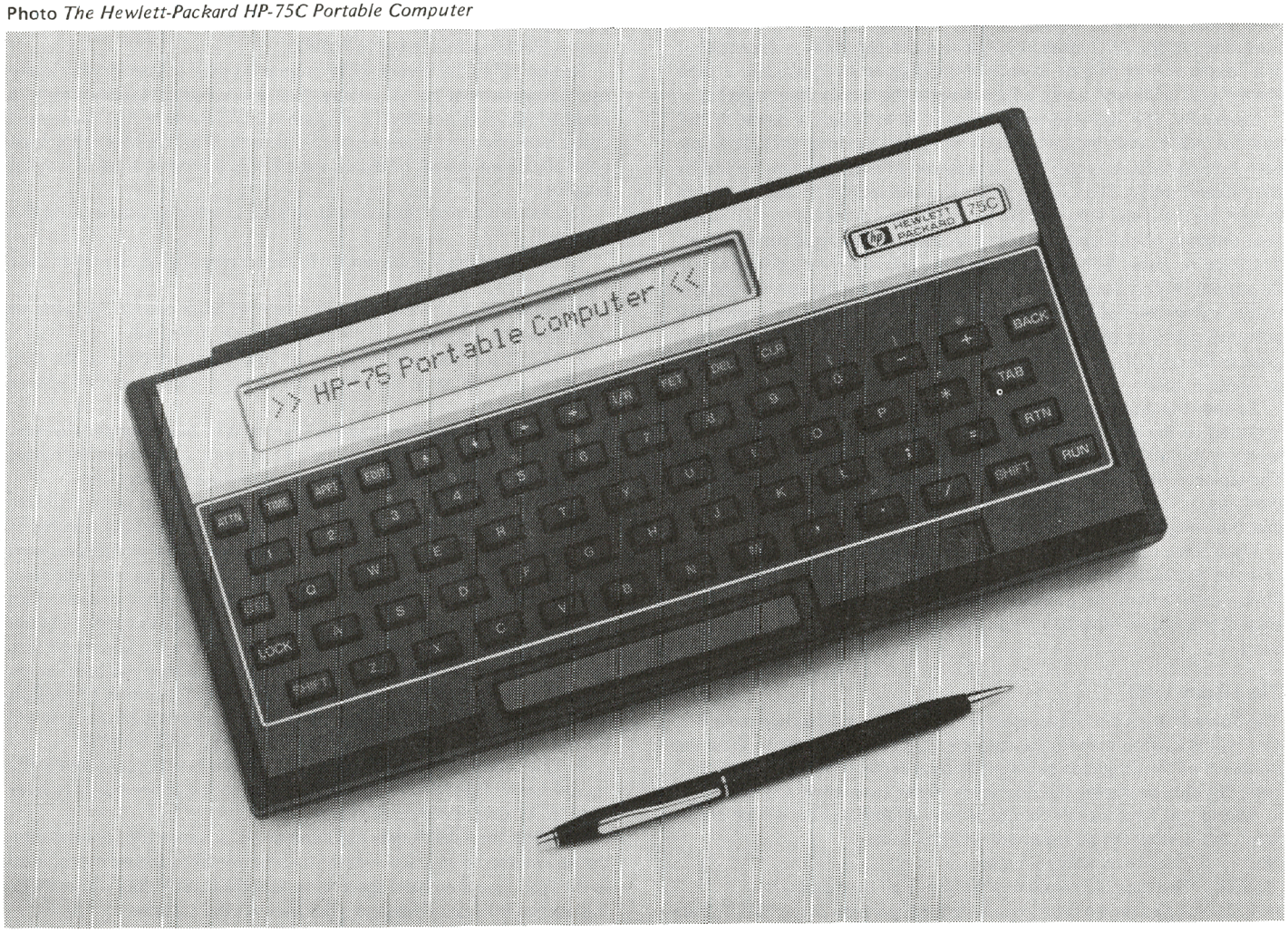
The rumors were true. Hewlett-Packard has been working on a highly portable personal computer. It will be made available to U.S. customers through HP and authorized HP dealers on September 15, 1982.

As is to be expected, the new machine appears to be potent in capability. It is small, slightly larger than "pocket-size, measuring 10 x 5 inches and 1-1/4 inch thick. It weighs one pound and ten ounces. For starters, it sports a 48 kilobyte combined BASIC interpreter and operating system in ROM along with an initial 16 kilobytes of user RAM. The RAM may be expanded internally by another 8 kilobytes. Furthermore, additional "software pacs" in 8 and 16 kilobyte ROM modules can be plugged directly into the unit giving it specialized capabilities. The combined memory (ROM and RAM) capability of the unit (all internal) is 120 kilobytes!

Another highly impressive feature of the unit is its built-in "mass storage" capability. A hand-pulled magnetic-card reader is provided as part of the unit. Magnetic strip-cards containing up to 1.3 kilobytes of programs or data are simply pulled through an integrated slot to transfer data or programs from and to the computer. This means a large number of programs can be conveniently carried by the user for instant loading into the machine as needed.

The unit has a typewriter-style keyboard that is large enough to permit touch-typing. Each key may be redefined by the user if desired. Keyboard overlays permit the customizing of the keyboard for special applications. A "hidden" numeric keypad is provided on the keyboard to aid in performing lengthy calculations.

Photo *The Hewlett-Packard HP-75C Portable Computer*



Another *Personal Information*™ product from SCELBI Publications.

A single-line, 32 character liquid-crystal display provides a scrolling window on a 96-character line. The dot-matrix display provides for upper and lower case characters.

The rechargeable nickel-cadmium batteries can power the unit for approximately 30 hours of "computing" operations. When the computer is not in actual operation, its non-volatile memory maintains all programs and data. An unusual feature of the HP-75C is its ability, using its built-in real-time clock, to effectively "turn itself on" at a predetermined time, execute a program unattended, and then power back down.

Other sophisticated features include file-handling capabilities. A number of different files, such a program files, data files and even "appointment" files can be created, held in RAM, and directed to interact with one another.

The unit also comes equipped with the HP-IL (Hewlett-Packard Interface Loop) which enables it to communicate directly with a wide range of peripherals and even other computers.

And, a number of peripheral devices will be immediately available for use with the new machine. These include a video/TV interface allowing a regular TV to be used as a monitor, mass storage devices such as a digital cassette drive, printers, a color graphics-plotter, acoustic modem, a digital multimeter, and other devices. Still further attachments will be available in the future.

The ROM-based operating system provides 147 BASIC commands, statements and functions. It also provides 22 system directives for a total high-level instruction set of 169 directives. With all of the operating system provided in ROM, the user's RAM complement is not diminished by operating system or other ROM plug-in modules.

The list price of the HP-75C is reported to be $995.00. The optional 8 kilobyte RAM module (giving 24K total) is $195.00.

For additional information on this unit and related equipment contact your local Hewlett-Packard sales office or mail inquiries to: Inquiries Manager, Hewlett-Packard Company, 1820 Embarcadero Road, Palo Alto, CA 94303.

PROGRAM LIBRARY SYSTEM FOR RADIO SHACK PC-1

How would you like to be able to place a whole series of programs for your Radio Shack PC-1 or Sharp PC-1211 on a single cassette tape. Then, have a system program that would automatically locate the program you want to use, load it into the computer and begin operation? Well, with the package provided here, you can have that sophisticated capability.

Background Information

The PC-1 has a CHAIN command that enables it to automatically load and begin the execution of a program. The simple standard explained here takes this basic capability and expands it into a convenient operating system. All it takes to implement the capability is the addition of a couple of lines of code in each of the programs you place in a "tape library" plus a "library" utility program to tie the whole thing together.

Essentially, the way the system works is to assign a name to the variable "N$" in each program, which represents the program's identification. Additionally, the label "N" is reserved in each program for use by the "library" utility. The CHAIN command is executed by each program in turn (or the initial library utility program) and proceeds to load in the next program on the tape and auto-execute it beginning at the label "N". This location (label "N") checks to see if the name of the current program (in variable N$) is the same as that being sought by the user (which the library utility stores as D$.) If not, the program displays its own name (for acknowledgement purposes) and proceeds to CHAIN in the next program in the tape. If it is the program being sought, then it simply proceeds to execute itself!

To keep the tape from running on indefinitely, a "terminating" program is placed on the tape at the end of all the "regular" programs. Its purpose is simply to notify the user that there are no more programs on the tape. The tape can then be rewound if further operations are to be performed. (Perhaps, in the future, PCs will have automatic tape-rewinding features that this program could activate!)

Thus, since each program in the tape library has the few special lines of code mentioned, the system will daisy-chain its way through the library until it finds the program desired by the user. It is a simple but elegant technique, especially if you are preparing a system for novice PC users.

The Library Utility

The libary utility is the first program on a tape library. It has two parts. The first part is used to prepare the data file FLIBRY that is used to show the names of all the programs available on a particular tape. The second part uses this data to display the file names to the user when requested.

Just so you have a clear picture of how a tape cassette will be organized, this is what the arrangement will look like:

"PL" The library utility program.
"FLIBRY" The data file containing names of all user programs.
---- A gap on the tape to provide for expansion of the FLIBRY data file above.
"PL" User program #1
"PL" User program #2
"PL" " " "
"PL" User program #N
"PL" The system "trailer" program to notify users that the tape must be rewound.

Note that all *programs* on the tape are CSAVEd using the same name "PL". They are assigned their individual names *internally* using the variable N$. This internal name is what is displayed to the user as each program is processed by the system. Also note that the *data* section of the tape is identified by the name FLIBRY.

Section "A" of the library utility program is used to specify how many user programs will be on a tape. You are asked to specify the item number (program number), a program name (limited to five characters) and a tape counter (location) value if desired. (This counter value must generally be estimated, based on experience, if programs are of varying length.)

The following procedure should be used to establish a tape using this system:

1. Load the library utility shown in the accompanying listing into your PC.

2. Prepare a fresh tape, zero your tape recorder counter, provide an optional voice message at the start of the tape, if desired.

3. CSAVE the library utility program as the first program on the tape *using the tape file name "PL"*. Thus, the saving command should appear as: CSAVE "PL".

4. Make a list of all the programs that are to be placed on the cassette. The list should contain the tape sequence number, a five-character name, and the tape counter reading. Use this list during the next step:

5. Place the pocket computer in the DEF mode and press SHIFT/A. Respond to the first query from the computer with the *total* number of programs to be placed on the tape *including the special ending program*. Then respond appropriately to the queries for the sequence number, name and tape counter value for each program. At the end of each series for a particular program you are given the opportunity to verify that your entry was correct. If not, the program gives you a chance to start the process over. When all data for the programs in the library has been inputted, the utility asks for the current date. Respond in the format YYMMDD. Following this, the utility routine prints out a copy of the library as it will appear to the user. It then asks: "READY TO RECORD FLIBRY?"

6. Check to make sure your tape unit is connected properly and in the record mode. Press ENTER after responding to the above query to have the FLIBRY data saved on the tape.

7. When the FLIBRY data has been saved, advance the tape some on the recorder to leave a gap in case you later decide to add extra programs to the tape. You then have space to update the FLIBRY data without wiping out the first user's program you place on the cassette!

8. Now you sequentially record each user program on the cassette. Remember, each such program must have the special control lines, shown in an accompanying listing. These lines direct the program to check for the desired name and continue the CHAINing operation if it is not the one being sought.

9. The last program on the tape is the special "file terminating" program that reminds the user that the tape needs rewinding. This program is shown in an accompanying listing.

10. You have completed preparation of a tape!

Using the System

Once a tape has been prepared in the standardized fashion explained, operation is simplicity itself.

Just rewind a tape to the beginning and read in the utility program by using CLOAD "PL". Once loaded, with the PC in the DEF mode, press SHIFT/Z. The FLIBRY data will automatically load and show the programs available on the tape. Pick the desired program number, enter, it, and let the system take over. It will automatically find and begin executing the desired program.

The system does provide "a touch of class."

R.J. Saam, 149 Gloucester Road, London, England SW7 4TH, is the author of this program. He would like to hear from PCN readers interested in standards for passing data from one program to another. He also notes that this system of automating program loading has potential for application on other PC systems.

Programs: *Directly below is the listing for the library utility program. Note that it has two major sections, starting at lines 790 ("N") and at line 850 ("Z"). At top of right hand column are the lines that should be in each user program in a tape library. Note that line 15 represents the beginning of the regular user program ("A"). A second routine also shown in the upper right hand column illustrates the library terminating program. You can make it as elaborate as you like!*

```
10  "N" N$="BRKVN"
11  IF D$=N$ PRINT D$;" READY.":PRINT " ":CLEAR:
    GOTO "A"
12  PRINT N$:PRINT "LOOKING FOR":PRINT D$:
    PRINT " ":CHAIN "PL","N"
15  "A" CLEAR . . . . (Normal start of regular program)
```

```
10  "N" N$="LASTP"
15  PRINT N$
20  PRINT "END OF LIBRARY"
23  IF D$=N$ GOTO 30
25  PRINT D$;" NOT FOUND"
30  PRINT "IF YOU WANT TO":PRINT "ADD ANY
    PROGRAMS"
35  PRINT "PLEASE OVERWRITE":PRINT "THIS LAST
    PROGAM"
40  PRINT "THEN AMEND LIST:"
45  PRINT "A. REWIND TAPE"
50  PRINT "B. CLOAD <PL> TO OBTAIN LIBRY"
55  PRINT "C. THEN SHFT/A":PRINT "D. REVISE
    FLIBRY"
56  PRINT " ":PRINT " ":PRINT " "
57  END
```

```
790 "N" N$="LIBRY"
792 PRINT N$;" READY.":CLEAR:PRINT "."
800 "A" D=1:PAUSE "LIBRY LOADER":PAUSE "INPUT #
    PROGS,NAME,LOCN."
802 INPUT "TOTAL # PROGRAMS?";F
803 FOR A=8 TO 3F+5 STEP 3
804 B=A+1:C=B+1
805 INPUT "ITEM #? ";A(A):INPUT "NAME(5CHAR)? ";
    A$(B):INPUT "TAPE COUNT:(. . . / . . .)";A$(C)
806 INPUT "WAS INPUT OK? Y/N ";B$:IF B$="N" PAUSE
    "RE-DO WHOLE ENTRY":GOTO 804
807 NEXT A
810 PAUSE "INPUT DONE":INPUT "FILE LIBRY DATE? ";
    G$
811 GOSUB "S"
812 "B" INPUT "READY TO RECORD LIBRY? ";B$:IF B$=
    "N" LET B$=" ":GOTO "B"
815 PRINT #"FLIBRY";F
820 PRINT "FLIBRY ";G$:PRINT "RECORDED":PRINT
    "NOW CSAVE YOUR"
821 PRINT "PROGRAMS WITH":PRINT "SAME NAME: PL"
822 PRINT "ALL PROGS NEED":PRINT "ENTRY ,N,"
    PRINT "WHERE N$=YOUR"
823 PRINT "FIVE CHAR LABEL"
824 END
```

```
850 "Z" D=2:PRINT "LIST PROGRAM LIBRARY"
860 INPUT "IS TAPE READY? Y/N";B$:IF B$="N"
    GOTO 860
865 INPUT #"FLIBRY";F
870 "S" PRINT "**A PERSONALIZED**":PRINT
    "FLIBRY: ";G$
871 USING " ##
872 PRINT F;" ENTRIES":PRINT " ":PRINT " # NAME
    FROM/TO
874 PRINT "== ==== ====/===
880 FOR A=8 TO 3F+5 STEP 3
882 B=A+1:C=B+1
884 PRINT A(A);" ";A$(B);" ";A$(C)
886 NEXT A
887 PRINT " ":PRINT " ":PRINT " "
888 IF D=1 RETURN
890 INPUT "WHICH PROGRAM NO.? ";A
891 IF A > F PRINT A;" GREATER THAN ";F;"#ITEMS
    ON FILE":GOTO 890
896 A=3A+5:B=A+1:C=A+2:D$=A$(B):PRINT D$;" # ";
    A(A)
897 PRINT "TAPE REPLAY ";A$(C):INPUT "TAPE
    READY? ";B$:IF B$="N" GOTO 897
898 CHAIN "PL","N"
```

TAX ASSESSMENT PROGRAM

This program can help you fill out your annual (local) tax assessment forms. It has the following features:

Maintenance of equipment purchase prices by year for the current year and eight prior years.

Maintenance of a total of purchases for the ninth prior and all earlier years.

Ability to update the values for any year at any time.

Maintenance of depreciated value factors for each year stored.

Ability to print a report showing the original purchase total and factors at any time.

Automatic shifting of values when a new year is entered.

The program is designed for the Radio Shack PC-1 with the printer, but it can be modified to run without the printer, if desired.

The program has four different functions. To select the appropriate function, put the computer into the DEF mode and press the shift key and the letter shown next to the function:

S – Set up current year and depreciation percents
A– Accumulate purchase prices of equipment
F – Final totals for the current year
D – Display stored values

Set Up

Your must run this first, before entering any values. This routine will prompt you for information, as described below. The program checks the values you enter for reasonability, and will print the message **ERROR** if the information you enter is incorrect. Press **ENTER** to return to the prompting message.

Here are the prompting messages for the set-up routine.:

CURRENT YEAR?

Enter the four-digit year. This should be the most recent year you want to process. In the sample reports 1977 was used. The program will automatically generate the eight preceding years (1976, 1975, . . . , 1969). To ensure that you have entered a four-digit number, the program checks to make sure the year is not less than 1950.

At this point, the program prompts you for the depreciated value factors for the current year, the eight prior years, and the ninth and prior years. Note: these factors are multiplied by the original purchase prices to get the depreciated values. For each one the program prints

YYYY PERCENT

on the printer. YYYY is the year, 1977 for example. The program then prompts

PERCENT?

Type the depreciated value factor and press **ENTER**. For example, if the factor is 90%, type 90 (NOT .90).

The program will ask for the years in descending order; for example, 1977, 1976, . . . , 1968. The final year is really going to be that year and all prior ones. In the samples below, the earliest year is 1969. 1968 and all preceding years are lumped together.

These factors remain constant regardless of the shifting of the years (unless, of course, you change them). In other words, the factors are really for the current year, whatever it may be, and the preceding years.

Accumulating Purchase Prices

To use this feature, press the **SHIFT/A**. The printer is not necessary for this processing. The program prompts you with

YEAR?

Type the four-digit year. The program checks to make sure it is not less than 1950. Processing continues depending on the value you entered:

If the year is less than or equal to the highest year stored, the program will prompt you for amounts with

AMOUNT?

Type in the original purchase price (dollars and cents). This will be added to the total for the specified year. The program then prompts you for the next amount. Continue entering information until you have no more for that year. Then press **ENTER** without entering a value and the program will stop.

Example *Input and Output for the Tax Assessment Program*

INPUT

```
1977    5600.00
       95.00%
-----------------
1976    5500.00
       90.00%
-----------------
1975    5400.00
       80.00%
-----------------
1974    5300.00
       70.00%
-----------------
1973    5200.00
       60.00%
-----------------
1972    5100.00
       50.00%
-----------------
1971    5000.00
       40.00%
-----------------
1970    8147.23
       30.00%
-----------------
1969   12121.31
       25.00%
-----------------
1968   15273.94
       25.00%
-----------------
```

OUTPUT

```
-----------------
        1977
COST    5600.00
DEPR    5320.00
-----------------
        1976
COST    5500.00
DEPR    4950.00
-----------------
        1975
COST    5400.00
DEPR    4320.00
-----------------
        1974
COST    5300.00
DEPR    3710.00
-----------------
        1973
COST    5200.00
DEPR    3120.00
-----------------
        1972
COST    5100.00
DEPR    2550.00
-----------------
        1971
COST    5000.00
DEPR    2000.00
-----------------
        1970
COST    8147.23
DEPR    2444.17
-----------------
        1969
COST   12121.31
DEPR    3030.33
-----------------
  BEFORE 1969
COST   15273.94
DEPR    3818.49
-----------------
       TOTAL
COST   72642.48
DEPR   35262.99
-----------------
```

If the year you entered is greater than the highest year stored, the program will ask

NEW YEAR (Y OR N)?

It wants to know whether you wish to start a new year or have just made an error. If you are starting a new year, type Y and press ENTER. The program will take about 12 to 15 seconds to shift its stored values and generate a new series of years. Then it will prompt you for amounts, as described above.

If you have made a mistake, type N and the program will prompt you for the year again.

NOTE: if you have made an error entering the year and the year is *not* greater than the highest year, the program won't know an error has occured. It will proceed to accumulate amounts either in the specified year or in the total for all years prior to the earliest year. For your own application, you might want to change the program to test for some year other than 1950 as the earliest allowable year to help prevent this type of error. At any rate, be careful when entering the year!

Producing Totals for a Year

To use this feature, press SHIFT/F. The printer must be on. The program will produce a report. The original cost of equipment purchased during that year and the depreciated value are printed for each year. Years are listed in descending order, starting with the highest year and continuing through the eighth prior year (1977 through 1969 in the sample). Then, the sum of all prior years is printed (BEFORE 1969 in the sample). If there were no purchases during some year, that year will not be printed. At the end of the report, the word TOTAL is printed, followed by the totals for all years.

Note: The running of this section of the program doesn't initialize it for a new year. Initialization only happens when you enter a new year using the accumulation portion of the program!

If you don't have a printer, you will want to change the program so that the values are displayed in a meaningful fashion. I recommend deleting the line of dashes, which separates the years, and adding the year itself to each line displayed.

Displaying Stored Values

To use this feature, turn the printer on, and press SHIFT/D. The program will list each year, the accumulated total, and the stored percent. This lets you see what the totals are and which percentages apply to each year.

Thanks for submitting this program go to: *Guerri F. Stevens, %General Business Systems, Inc., 1420 Main Street (Suite 130), Glastonbury, CT 06033.*

Table *Variable Assignments in Tax Assessment Program*

A	General — purpose
B	General — purpose (used for entry of percents)
C$	Response to "new year" question
D	Depreciated total
I	Subscript
A(21)—A(30)	Years: A(21) is the latest; A(30) is the earliest, and represents that year and all prior.
A(31)—A(40)	Depreciation factors
A(41)—A(50)	Accumulated purchase totals
	Note that the values in A(31) through A(40) and in A(41) through A(50) correspond to the years in A(21) through A(30).

Program *Local Tax Assessment*

```
10:"S"FOR I=31
   TO 40:A(I)=1
   :A(I+10)=0:
   NEXT I
20:INPUT "CURRE
   NT YEAR? ";A
30:IF A<1950
   GOSUB 90:
   GOTO 20
40:FOR I=21TO 3
   0:A(I)=A:A=A
   -1
50:PRINT USING
   "#####";A(I)
   ;" PERCENT"
60:INPUT "PERCE
   NT? ";B
70:IF (B>100)+(
   B<0)GOSUB 90
   :GOTO 60
80:A(I+10)=B/10
   0:NEXT I:END
90:PRINT "ERROR
   ":RETURN
100:"A"INPUT "YE
   AR? ";A
110:IF A<1950
   GOSUB 90:
   GOTO 100
120:IF A>A(21)
   GOSUB 170
130:IF A>A(21)
   GOTO 100
140:I=21:GOSUB 2
   50:A=0
150:INPUT "AMOUN
   T? ";A:A(I)=
   A(I)+A:GOTO
   150
160:END
170:C$=" ":INPUT
   "NEW YEAR (Y
    OR N)? ";C$
180:IF C$="Y"
   GOSUB 210:
   GOTO 180
190:IF C$="N"
   RETURN
200:GOSUB 90:
   RETURN
210:A(50)=A(50)+
   A(49):A(30)=
   A(29)
220:FOR I=28TO 2
   1STEP -1:A(I
   +1)=A(I):A(I
   +21)=A(I+20)
   :NEXT I
230:A(21)=A(22)+
   1:A(41)=0:IF
   A=A(21)LET C
   $="N"
240:RETURN
250:IF A<A(30)
   LET I=50:
   RETURN
260:IF A=A(I)LET
   I=I+20:
   RETURN
270:I=I+1:GOTO 2
   60
280:"F"B=0:D=0:
   FOR I=21TO 2
   9:IF A(I+20)
   =0GOTO 330
290:A=A(I+20):B=
   B+A:GOSUB 44
   0:PRINT "
     ";USING "#
   ####";A(I)
300:PRINT "COST"
   ;USING "####
   ####.##";A
310:A=INT ((A(I+
   10)*A(I+20)+
   .005)*100)/1
   00:D=D+A
320:PRINT "DEPR"
   ;A
330:NEXT I
340:IF A(50)=0
   GOTO 390
350:B=B+A(50):
   GOSUB 440:
   PRINT USING
   "######";"  B
   EFORE";A(29)
360:PRINT "COST"
   ;USING "####
   ####.##";A(5
   0)
370:A=INT ((A(40
   )*A(50)+.005
   )*100)/100:D
   =D+A
380:PRINT "DEPR"
   ;A
390:GOSUB 440:
   PRINT "
   TOTAL":PRINT
   "COST";B
400:PRINT "DEPR"
   ;D:GOSUB 440
   :PRINT " ":
   PRINT " ":
   PRINT " ":
   END
410:"D"FOR I=21
   TO 30:A=A(I+
   20):PRINT
   USING "######
   ";A(I);USING
   "#########.##
   ";A
420:A=A(I+10)*10
   0:PRINT "
     ";USING "#
   ###.##";A;"%
   ":GOSUB 440
430:NEXT I:PRINT
   " ":PRINT "
   ":END
440:PRINT "-----
   ----------"
   :RETURN
```

DECIMAL/BASES 2 – 16 CONVERSION PROGRAM

Thomas S. Cox. %Platt Saco Lowell, Drawer 2327, Greenville, SC 29602, sent in this program. You can use it to convert between decimal numbers and those in any base between 2 and 16 or vice versa.

Several versions of the program are shown. One for the Sharp PC-1500/Radio Shack PC-2. A second for the Casio FX-702P.

Program *Number Conversion for the PC-1500/PC-2*

```
10:"BC"CLEAR :
   WAIT 50:PRINT
   "Base Conversi
   ons (2-16)"
12:A$="0123456789
   ABCDEF"
15:DIM A0$(0)*50,
   A1$(0)*50
20:INPUT "B(N)-10
    or B10-BN 1or
   2? ";L
25:IF (L=1)+(L=2)
   <>1CLS :GOTO 2
   0
30:INPUT "BASE (N
   =?) (2-16) ",N
40:IF (N<2OR N>16
   )PRINT "BASE O
   UT OF RANGE ":
   CLS :GOTO 30
50:CLS
60:ON LGOTO 100,2
   00
100:WAIT 50:PRINT
   "BASE ";N;" TO
    BASE 10":A0$(
   0)="":A1$(0)="
   "
105:WAIT 0:PRINT "
   # IN BASE";N;"
    ":INPUT A0$(0
   )
110:CLS :A=LEN A0$
   (0):B=0
115:FOR I=0TO A-1:
   C$=MID$ (A0$(0
   ),A-I,1):G=ASC
   C$:IF (G>=48)+
   (G<=57)=2LET G
   =G-48:GOTO 130
120:IF (G>=65)+(G<
   =70)=2LET G=G-
   55:GOTO 130
125:BEEP 1:CLS :
   WAIT 20:PRINT
   "INVALID ENTRY
   : TRY AGAIN":
   CLS :WAIT 0:
   GOTO 100
130:IF G>=NWAIT 50
   :PRINT "DIGIT
   >= BASE":CLS :
   WAIT 0:GOTO 10
   5
140:B=B+G*N^I:NEXT
   I:WAIT :PRINT
   B:GOTO 100
200:WAIT 50:PRINT
   "Base 10 to Ba
   se ";N:A0$(0)=
   "":A1$(0)="":B
   $=""
205:WAIT 0:INPUT "
   DECIMAL No.= "
   ;D:E=D:IF D>9.
   999E10WAIT 50:
   PRINT "TOO BIG
    ":CLS :WAIT 0
   :GOTO 200
215:IF (N=2)+(D>2^
   26-1)=2WAIT 50
   :PRINT "TOO LA
   RGE FOR DISPLA
   Y":CLS :WAIT 0
   :GOTO 200
220:WAIT 0:F=0:CLS
230:FOR I=1TO 26
235:B=(E/N)-INT (E
   /N):C=INT ((B*
   N)+.5):IF INT
   (E/N)=0LET F=1
240:E=INT (E/N)
250:B$=MID$ (A$,C+
   1,1):A0$(0)=A0
   $(0)+B$
260:IF F=1GOTO 300
270:NEXT I
280:WAIT 100:PRINT
   "TOO LARGE FOR
    DISPLAY":CLS
   :GOTO 200
300:WAIT 0:FOR I=
   LEN A0$(0)TO 1
   STEP -1:B$=
   MID$ (A0$(0),I
   ,1)
310:A1$(0)=A1$(0)+
   B$:NEXT I:WAIT
   :CLS
320:PRINT A1$(0):
   GOTO 200

STATUS 1
                1090
```

Program *Number Conversion for the Casio FX-702P*

```
VAR: 46 PRG: 1520

P0: 513 STEPS
   5 WAIT 20
  10 PRT "BASE CONVE
     RSION"
  15 PRT "BASE(N) TO
      BASE(10)"
  17 INP "BASE (N) "
     ,N
  20 PRT "# IN BASE
     ";N;:INP $
  30 A=LEN($)
  40 B=0
  50 FOR I=0 TO A-1
     STEP 1
  60 C$=MID(A-I,1)
  70 GSB 200
  75 IF D)(N-1);PRT
     "DIGIT ≥ BASE":
     GOTO 20
  80 B=B+D*N↑I
  90 NEXT I
 100 WAIT 0
 110 PRT $;" IN B(";
     N;")="
 115 PRT B;" B10":ST
     OP :GOTO 20
 200 IF C$="0";D=0:R
     ET
 201 IF C$="1";D=1:R
     ET
 202 IF C$="2";D=2:R
     ET
 203 IF C$="3";D=3:R
     ET
 204 IF C$="4";D=4:R
     ET
 205 IF C$="5";D=5:R
     ET
 206 IF C$="6";D=6:R
     ET
 207 IF C$="7";D=7:R
     ET
 208 IF C$="8";D=8:R
     ET
 209 IF C$="9";D=9:R
     ET
 210 IF C$="A";D=10:
     RET
 211 IF C$="B";D=11:
     RET
 212 IF C$="C";D=12:
     RET
 213 IF C$="D";D=13:
     RET
 214 IF C$="E";D=14:
     RET
 215 IF C$="F";D=15:
     RET
 216 PRT "INVALID IN
     PUT":END

P1: 660 STEPS
   5 WAIT 20
  10 PRT "BASE CONVE
     RSION"
  15 PRT "BASE(10) T
     O BASE(N)"
  17 VAC :INP "BASE
     (N)",N
  20 INP "DECIMAL NU
     MBER",D:E=D
  25 F=0:PRT "CALCUL
     ATING";
  30 FOR I=0 TO 19 S
     TEP 1
  40 B=FRAC (E/N)
  50 C=INT ((B*N)+.5
     )
  55 IF INT (E/N)=0;
     F=1
  60 E=INT (E/N)
  70 GSB 300
  80 IF F=1 THEN 100
  90 NEXT I
 100 PRT " ":PRT "TH
     E ANSWER IS:"
 110 FOR I=0 TO 19:I
     F A$(I)="" THEN
      130
 120 PRT A$(I);
 130 NEXT I
 135 STOP
 140 GOTO 17
 300 IF C=0;A$(19-I)
     ="0":RET
 301 IF C=1;A$(19-I)
     ="1":RET
 302 IF C=2;A$(19-I)
     ="2":RET
 303 IF C=3;A$(19-I)
     ="3":RET
 304 IF C=4;A$(19-I)
     ="4":RET
 305 IF C=5;A$(19-I)
     ="5":RET
 306 IF C=6;A$(19-I)
     ="6":RET
 307 IF C=7;A$(19-I)
     ="7":RET
 308 IF C=8;A$(19-I)
     ="8":RET
 309 IF C=9;A$(19-I)
     ="9":RET
 310 IF C=10;A$(19-I
     )="A":RET
 311 IF C=11;A$(19-I
     )="B":RET
 312 IF C=12;A$(19-I
     )="C":RET
 313 IF C=13;A$(19-I
     )="D":RET
 314 IF C=14;A$(19-I
     )="E":RET
 315 IF C=15;A$(19-I
     )="F":RET
 318 PRT "INVALID IN
     PUT":END
```

AMERICAN ROULETTE

Gary Heidbrink provided this version of a classic Las Vegas game. The listing shown will run on both PC-1/PC-1211 and PC-2/PC-1500 units.

The game is modeled on the American version of Roulette which has the numbers zero through 36 and a double zero (00). You are allowed to bet as follows.

Double zero: A bet that the marble will fal in the 00 slot.

Single number bet: Enter the number desired (0 – 36) followed by the amount of the wager.

Red: The numbers 1, 3, 5, 7, 9, 12, 14, 16, 18, 19, 21, 23, 25, 27, 30, 32, 34 and 36 are red.

Black: The numbers 2, 4, 6, 8, 10, 11, 13,15, 17, 20, 22, 24, 26, 28, 29, 31, 33 and 35 are this color.

Even: Any even number (excluding zero or 00).

Odd: Any odd number (not 0 or 00).

1 – 18: Any number within this range.

19 – 36: Any number within this range.

1 – 12: Inclusive!

13 – 24: Inclusive!

25 – 36: Inclusive!

Column 1 – 34: A bet that the number will be one of these – 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31 or 34.

Column 2 – 35: Any one of these – 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32 or 35 is a winner.

Column 3 – 36: If a 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33 or 36 comes up then you win.

Bets continue to ride until they are removed by betting zero or you change the value of the bet. If you want to dear all bets, quit the game and start over.

The odds: Betting Even, Odd, Red, Black, 1–18 or 19–36 pays even money. Betting 1–12, 13–24, 25–36 or any Column pays 2:1. Single numbers (including 0 and 00) pay 35:1.

Good luck.

Program *American Roulette*

```
5   "A" B=3254:INPUT "RND#=";B
10  FOR E=6 TO 57:A(E)=0:NEXT E:PRINT "  AMERICAN
    ROULETTE"
15  INPUT "BET OR QUIT? (B/Q):";D$:IF D$="Q"
    GOTO 295
20  INPUT "CHANGING BETS? (Y/N):";D$:IF D$="N"
    GOTO 95
25  INPUT "DOUBLE 00:";H
30  INPUT "ENTER SINGLE BET #:";E:F=E+21:INPUT
    "AMOUNT BET:";A(F):GOTO 30
35  INPUT "RED:";I
40  INPUT "BLACK:";J
45  INPUT "EVEN:";K
50  INPUT "ODD:";L
55  INPUT "1-18:";M
60  INPUT "19-36:";N
65  INPUT "1-12:";O                    (The letter O!)
70  INPUT "13-24:";P
75  INPUT "25-36:";Q
80  INPUT "COLUMN 1-34:";R
85  INPUT "COLUMN 2-35:";S
90  INPUT "COLUMN 3-36:";T
95  PAUSE "WHEEL IS SPUN"
100 E=E+1:B=439147*B+E:B=23*B-INT(B*.23)*100:A=INT
    (B*.38)
105 IF A=37 LET F=H*36:GOTO 270
110 IF A=0 LET F=U*36:GOTO 270
115 FOR E=1 TO 36:IF A=E LET F=A(E+21)*36
120 NEXT E
125 IF A=2 GOTO 220
130 IF A=4 GOTO 220
135 IF A=6 GOTO 220
140 IF A=8 GOTO 220
145 IF A=10 GOTO 220
150 IF A=11 GOTO 220
155 IF A=13 GOTO 220
160 IF A=15 GOTO 220
165 IF A=17 GOTO 220
170 IF A=20 GOTO 220
175 IF A=22 GOTO 220
180 IF A=24 GOTO 220
185 IF A=26 GOTO 220
190 IF A=28 GOTO 220
195 IF A=29 GOTO 220
200 IF A=31 GOTO 220
205 IF A=33 GOTO 220
210 IF A=35 GOTO 220
215 F=F+I*2:GOTO 225
220 F=F+J*2
225 IF A/2=INT(A/2) LET F=F+K*2:GOTO 235
230 F=F+L*2
235 IF A > 24 LET F=F+Q*3+N*2:GOTO 255
240 IF A > 18 LET F=F+P*3+N*2:GOTO 255
245 IF A > 12 LET F=F+P*3+M*2:GOTO 255
250 F=F+O*3+M*2
255 IF A/3=INT(A/3) LET F=F+T*3:GOTO 270
260 IF (A+1)/3=INT((A+1)/3) LET F=F+S*3:GOTO 270
265 F=F+R*3
270 FOR E=8 TO 57:F=F-A(E):NEXT E:G=G+F
275 BEEP 1:IF A=37 PRINT "BALL LANDS ON: 00":
    GOTO 285
280 PRINT "BALL LANDS ON: ";A
285 IF F < 0 LET F=-F:PRINT " YOU LOSE $";F:
    GOTO 15
290 PRINT "YOU WIN $";F:GOTO 15
295 IF G < 0 LET G=-G:PRINT "YOU LOST $";G:GOTO 10
300 PRINT "YOU WON $";S:GOTO 10
```

PROTECTION FOR YOUR PC!

Ever wish you could safely transport your entire PC system — complete with printer, cassette drive, and a few extra rolls of paper? Now you can. **Shale Diversified Enterprises,** *108 Ferris Avenue, Chardon, OH 44024,* provides several styles for both PC-1/PC-1211 and PC-2/PC-1500 models. For details and information on pricing write directly to the firm and ask about their "PC Attache Cases."

Photo *PC Attache Case Protects Entire System*

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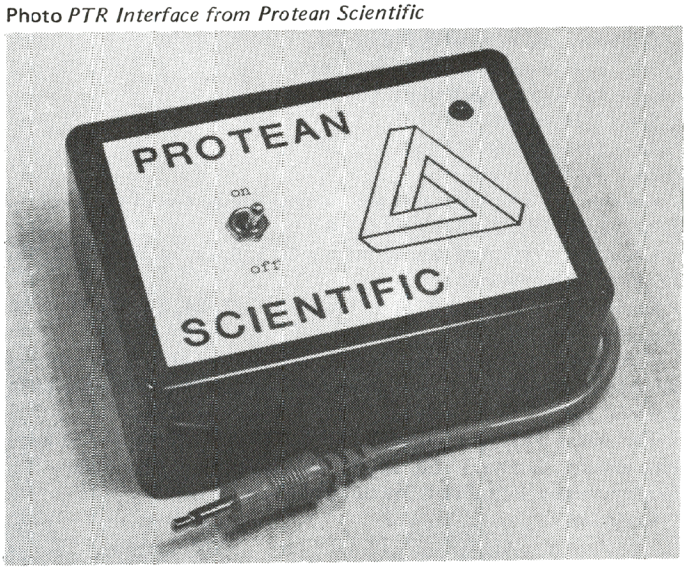
INTERFACE TRANSFERS DATA FROM PC TO DESKTOP UNIT

A new device dubbed the PTR Interface from **Protean Scientific,** *Route 13, Lincoln, NE 68527,* claims to provide the ability to transfer alpha and numeric data from a Radio Shack PC-1 to a TRS-80 Model I or III desktop unit.

The interface connects between the desktop unit and its cassette recorder and allows tapes created by the PC to be processed. You can transfer complete files or a specified number of memories. Checksum error detection is included. The unit is provided with software which includes an assembly language routine to facilitate the transfer process. Write directly to the company for additional information and pricing.

Photo *PTR Interface from Protean Scientific*



FROM THE WATCH POCKET

Sharp Electronics will begin releasing ROM Software Libraries during the fourth quarter of 1982. These modules, which will plug directly into the back of the PC-1500, each contain a whole series of routines specifically designed to solve problems commonly encountered in particular fields. Modules covering five general areas have been announced to date: Mathematics, Electrical Engineering, Statistics, Finance and Graphics. To give you an idea of the scope of each module, the Electrical Engineering Application Module is reported to be able to perform the following types of operations: Complex arithmetic with polar I/O capability. Fourier analysis. Network analysis. Bode/Nyquist calculations. Complex roots of a polynomial. Active filter design. Passive filter design. Phase-locked loop analysis. Series to parallel conversions. Smith Chart calculations. Signal detection determinations. Polynomial multiplication. Decibels, nepers, power, voltage and current ratio conversions. Reactance chart calculations and complex matrix arithmetic. Want more information on price and availability? Write **Atlantic Northeast Marketing,** *P.O. Box 921, Marblehead, MA 01945* or phone (617) 639-0285.

Panasonic has announced further reductions in the list price of its HHC and accessories. A 4K RL-H1400 is down to $380.00. They now have an 80-character, 4-color printer/plotter unit, an acoustic modem with cassette interface and other new peripherals available. For further information write to them at *One Panasonic Way, Secaucus, NJ 07094.*

Sanyo has been displaying a hand-held computer at recent trade shows. The model PHC8000 is said to contain a 24K operating system in ROM and have 4K of user RAM in the standard unit. It can mate with the PHC8010 to become a terminal, expand memory, etc. Look for U.S. deliveries later this year.

Now that Hewlett-Packard has come out of the woods, where is their old rival Texas Instruments? — *Nat Wadsworth, Editor*